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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/384,141	08/27/1999	IKKO FUSHIKI	03797.81834	7425

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EXAMINER

LAROSE, COLIN M

ART UNIT

PAPER NUMBER

2623

DATE MAILED: 01/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/384,141

Applicant(s)

FUSHIKI ET AL.

Examiner

Colin M. LaRose

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4,6-23,57 and 60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,6-23,57 and 60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Amendments and Arguments

2. Applicants' amendments filed 19 December 2002, have been entered and made of record. Applicant has canceled claims 2, 3, 5, 24-56, 58, and 59. Claims 1, 4, 6-23, 57, and 60 are pending.

3. Applicant's arguments with respect to claims 1, 4, 6-23, 57, and 60 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

4. Claims 1, 4, and 6-14 are objected to because of the following informalities: in claim 1, "sRGBA" lacks antecedent basis and appears to be a typo. Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1, 4, 6-23, 57, and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pritchett and “A Standard Default Color Space for the Internet – sRGB” by Stokes et al. (“Stokes 2”).

Regarding claim 1, Pritchett discloses a method for providing a color space representation of color images in a color management system, comprising the steps of:

mapping YCC color data values representing an image in a first device into gamut expanded RGB color values of a gamut expanded RGB color space (710, figure 7: inputted YCC of a video camera is converted to gamut expanded RGB);

converting the gamut expanded RGB color data values of the gamut expanded RGB color space into RGB color data values representing an image in a second device (730, figure 7: the gamut expanded RGB is converted to RGB format), the color data values of the first device being different from the RGB color data values of the second device (i.e. RGB is not the same as YCC) and the physical appearance of the image in the first device being the same as the physical appearance of the image in the second device (column 2, lines 34-39: the quality of the original image, with respect to the viewer, is preserved after conversion without information loss).

Pritchett demonstrates the YCC-RGB conversion because it is an extreme case among color space conversions and is a useful and common conversion. Pritchett teaches that his invention relates to converting images between two devices and is not limited to the specific example of YCC-RGB conversion (column 3, lines 44-59).

Stokes 2 teaches that the variations in physical appearance of an image displayed on different RGB devices, such as monitors, is a well-known problem, and discloses the standard RGB color space in order to improve color fidelity among different devices. Thus, one skilled in

the art would have been motivated to utilize Pritchett's system for an RGB-RGB conversion between two devices that each process images in RGB with a reasonable expectation of success.

Pritchett does not disclose or suggest an RGB-RGB conversion by utilizing an intermediate expanded sRGB color space. However, as shown by Stokes 2, the color space sRGB is a known standard color space used in color management applications for color space conversion. It would have been obvious to one skilled in the art to replace RGB with the well-known standard RGB.

Claims 15, 23, 57, and 60 recite similar features substantially within the scope of claim 1 and are rejected in accordance with claim 1.

Further regarding claims 15 and 23, Pritchett teaches the expanded RGB includes values beyond a reproduction range and includes a precision and range sufficient to include all colors in a humanly visible gamut (column 6, lines 18-22).

Further regarding claim 60, Pritchett discloses at least one of super transparent and super opaque colors using an alpha channel for at least one of transparency information and opaqueness information (elements 460 and 470, figure 4).

Regarding claim 4, Pritchett discloses clipping extended RGB values to RGB values (column 8, lines 25-30).

Regarding claim 6, the Applicant's specification states, "when the size of each component is extended to higher bit (12 bit or higher), the non-linearity requirement is eliminated" (page 8, lines 6-7). Pritchett discloses extending the size of each component to 13

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bits (column 6, lines 18-22) and, as a result, the extended RGB color space is inherently linear in visual intensity, in accordance with Applicant's disclosure.

Regarding claims 7 and 16, Pritchett discloses an extended RGB color space (as included in the expanded color space) that includes at least the visible range of color values (column 6, lines 15-22) and extends into negative component values and beyond 1.0 when normalized to 1.0 in RGB (column 5, lines 1-4 and column 6, lines 18-22), is defined by a gamut that extends beyond normalized values (column 5, lines 1-4 and column 6, lines 18-22), and may include an alpha channel for at least one of transparency information and opaqueness information (column 7, lines 3-15).

Regarding claim 8, Pritchett teaches the expanded RGB color space extending beyond the range of $[0, 1.0]$ when normalized to 1.0 in RGB (column 5, lines 1-4 and column 6, lines 18-22).

Regarding claims 9 and 17, Pritchett includes the step of multiplying normalized RGB values by a predetermined matrix in mapping to an extended RGB color space (column 6, lines 53-58).

Regarding claims 10 and 18, Stokes discloses this conversion on page 10.

Regarding claims 11 and 19, Pritchett discloses representing the extended RGB with 13 bits to cover the extended RGB range of $(-4, 4)$. Ten bits are used for fractional portions, two bits for integer portions, and one sign bit (column 6, lines 18-22).

One of ordinary skill in the art recognizes the advantage of using a large number of bits to represent digital image data. Therefore, Pritchett's representation of color data value using 13 bits (rather than 16 or 17 or 18, etc.) is a design choice. Applicant's specification states "... in

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one embodiment, color data values may be expressed in a signed 16-bit integer...” This suggests that the choice of 16 bits to represent extended RGB data is not an inventive step and is merely a design choice.

Regarding claims 12 and 20, techniques for converting normalized color data to 16-bit color data by the multiplication of a scalar were well known to those of ordinary skill in the art at the time of the invention. This claim is necessitated by the choice of representing color data in 16 bits and does not present any inventive steps.

Regarding claims 13 and 21, Pritchett discloses clipping extended RGB values to RGB values (column 8, lines 25-30). In Pritchett’s embodiment, RGB data is represented by ten bits (column 5, lines 6-9), and extended RGB data is represented by 13 bits (column 6, lines 18-22), so clamping involves transforming color space data from 13 to 10 bits.

As stated above, Pritchett’s representation of extended RGB with 13 bits is a design choice. Similarly, the representation of RGB data in ten bits is also a design choice. Therefore, choosing to clip 16-bit data to 8-bit data rather than 13-bit data to 10-bit data is a design choice, and no inventive steps are taken.

Regarding claims 14 and 22, Pritchett’s teachings include the case wherein color data values are one of non-premultiplied color data values and premultiplied color data values. It is noted that this limitation covers all cases.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


The 1998 IEC TC100 sRGB Draft Standard provides additional background on the sRGB format.

U.S. Patent 6,025,885 by Deter discloses an RGB-RGB conversion that utilizes a "fictitious" RGB color space, wherein the fictitious RGB ($R'G'B'$) extends beyond the gamut of the input RGB (see figure 2). Then, $R'G'B'$ is converted to an output RGB ($R''G''B''$). The result is constant hue and increased saturation.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colin M. LaRose whose telephone number is (703) 306-3489. The examiner can normally be reached Monday through Thursday from 8:00 to 5:30. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au, can be reached on (703) 308-6604. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2600 Customer Service Office whose telephone number is (703) 306-0377.


AMELIA M. AU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

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10 January 2003